PATENT SPECIFICATION 831,294

DRAWINGS ATTACHED.

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COMPLETE SPECIFICATION.

Improvements relating to Devices for Compressing the Seals for Pipe Joints of the Bell and Spigot Type.

We, PLATT MALLEABLE CASTINGS LIMITED of Clive Foundry, Leamore, Walsall in the County of Stafford, a Company incorporated under the Laws of the United Kingdom of Great Britain, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention has reference to improvements relating to devices for compressing the seals for pipe joints of the bell and spigot type.

Devices for the purpose aforesaid as generally employed heretofore comprise an anchor ring adapted to be mounted on and to be secured firmly on the bell ended section of a pipe, a follower ring which is adapted to be slidably mounted on the spigot section of a pipe adjacent to that part of the spigot which is fitted into the bell end of the pipe to which it is to be joined and bolts and nuts for drawing together the anchor and follower rings when located on and secured on their respective pipe sections to effect compression of the seals.

In order to enable devices as aforesaid to be adapted to pipes of varying diameters it has been proposed to form the anchor rings in two or more parts which are provided at the ends with serrated portions which can be engaged so as to vary the effective circumferential dimensions of the ring, and then securing adjacent parts together in an adjusted relationship by means of nuts and bolts.

Likewise it has been proposed to form the follower rings in two or more parts and to provide each part adjacent to the ends with a plurality of longitudinally arranged upstanding ribs which are engageable by clips so as to vary the circumference of the follower ring, filler pieces of a similar cross section to the follower ring being interposed in the gaps which may obtain between the presented ends of the said parts. The filler pieces aforesaid are retained in position by the clips when fitted over the relevant ribs.

There has also been proposed an adjustable pipe clamp for use in pipe lines for bell and spigot joints for providing a fluid tight seal between adjacent pipe lengths characterised in that the arcuate sections of the follower ring are fabricated from lengths of metal of angle-section, whilst those of the anchor ring are fashioned from lengths of flat metal, said arcuate lengths having bored radial lugs or ears welded to their ends so that the lugs of any one section will abut those of contiguous sections when the sections are assembled on the spigot and bell of the pipe whereby the sections of any one ring can be fastened together by bolts, the sections of both the follower and anchor rings also having apertured clamping lugs welded thereto at spaced intervals throughout their lengths and between which clamping bolts extend to draw the follower ring toward the anchor ring to press the sealing medium into sealing contact with the end face of the bell and the adjacent portion of the spigot, said pipe clamp being further characterised by shims or spacing pieces adapted to be located between the radial end lugs or ears of the several sections of the anchor and follower rings to vary the internal diameter of said rings to accommodate small variations in pipe diameter.

[*Price* 3*s.* 6*d.*]

Whilst devices as aforesaid have proved efficient in practice the fitting of the rings is found to be difficult when working in confined spaces such as excavations and the present invention has for its object to provide an improved device for use in the compression of seals for pipe joints of the bell and spigot type which is simple in construction and readily capable of fitment with facility under the majority of working conditions.

Accordingly the invention consists of a device for compressing the seals for pipe joints of the bell and spigot type comprising an anchor ring shaped to seat on and adapted to be secured on the flange of the bell section of a pipe and a follower ring adapted to be fitted slidably on the spigot section of a pipe and shaped to fit around and substantially to enclose the seal and means for drawing the follower ring toward the anchor ring for compressing the seal and in which the anchor and follower rings are formed as castings and are provided at the ends with integral outwardly and substantially radially projecting eyes and in which the eyes are adapted to be engaged by bolts which with the co-operation of nuts enable the said rings to be secured on the respective end portions of the pipes to be joined the said bolts in the case of the follower ring being adapted to have mounted thereon a filler piece or pieces which conform to the cross section of the follower ring.

The invention also resides in a device for compressing the seals for pipe joints of the bell and spigot type constructed and adapted for use substantially as will be described hereinafter.

The invention will now be described with particular reference to the accompanying drawings wherein :—

Figure 1 is a fragmentary view in perspective illustrating two lengths of pipe joined by a bell and spigot type of joint and incorporating a seal compressing device constructed in accordance with the invention.

Figure 2 is a fragmentary view in longitudinal section of two lengths of pipe joined by a bell and spigot type of joint and incorporating a seal compressing device constructed in accordance with the invention,

Figure 3 is a perspective view illustrating the manner of applying to the bell end of a pipe the anchor ring employed in the seal compressing device illustrated in Figures 1 and 2,

Figure 4 is a perspective view of a segment of the anchor ring incorporated in the seal compressing device illustrated in Figures 1, 2 and 3,

Figure 5 is a fragmentary view on an enlarged scale showing the manner of joining two adjacent segments of the anchor ring,

Figure 6 is a front elevation of the follower ring employed in the seal compressing device as illustrated in Figures 1 and 2, and

Figure 7 is a perspective view showing separated the component parts or portions of the component parts of a follower ring as illustrated in Figure 6.

In the drawings, where desirable, like numerals of reference are employed to denote similar parts in the several views.

According to the illustrated embodiment of the invention the anchor ring denoted generically by the reference letter A is formed as four similar segments 10.

Each segment 10 is provided at the end with an outwardly and radially projecting lug or eye 101 in which is formed a central hole 102, said holes 102 when in register being adapted to have bolts 11 passed therethrough which co-operate with nuts 12 so that the segments 10 may be secured together around the bell portions 131 of pipes 13 which may be of varying diameters.

The segments 10 are of a configuration such that they will seat on the flange of the bell portion 131 of a pipe 13 and thereby ensure a secure anchor eye on the pipe 13 and avoid the necessity for the use of shims, see Figure 2.

The follower ring denoted generically by the reference letter B is formed of two segments 14 the ends of which are provided with outwardly and radially projecting lugs or eyes 141 having herein holes 142 through which when brought into register are passed bolts 15 which co-operate with nuts 16 for securing the segments together around the spigot end 132 of a pipe 13.

The bolts 15 aforesaid for the follower rings have located thereon filler pieces 17 the configuration of which conforms to the cross section of the follower ring.

The filler pieces 17 are or may be made of varying thicknesses.

The segments 14 are of a cross section such that they will fit around and substantially enclose the seal when fitted on a pipe 13 see Figure 2.

The segments 10 and 14 are formed as castings as will be obvious from a study of the drawings.

In use the anchor ring segments 10 are fitted on to the bell portion 131 of a pipe 13 and bolted together as required so as to engage firmly the outer periphery of the said bell portion 131.

The follower ring segments 14 are placed around the spigot section 132 of the pipe 13 and the requisite filler pieces 17 inserted to fill any gap between the presented ends of the segments 14 of the follower ring B, the bolts 15 are then passed through the holes 142 in the lugs 141 and in the filler pieces 17 and the nuts 16 engaged therewith and tightened up to secure the segments 14 to each other.

The drawing bolts 18 are then engaged within the relevant holes in the anchor and follower rings and the nuts 19 engaged there-

with and tightened so as to cause the follower ring B to be drawn over the spigot section 13 on which it is mounted to effect a compression of the seal 20 which is substantially enclosed by the follower ring B see Figure 2.

It will be appreciated that when fitting the anchor and follower rings A, B separation of the individual segments is not required so that in the case of the anchor ring A when a bolt 11 is removed the segments hang in a chainwise manner, see Figure 3, which admits of the segments 10 being readily manipulated to embrace the bell portion 131 preparatory to being secured thereon.

Further in the case of fitting a follower ring B individual fitting of filler pieces 17 during actual fitting is not required as this can be effected preparatory to fitting as determined by the known diameter of the spigot section 131 of a pipe to which a follower ring B is to be fitted.

It will be seen that a device in accordance with the invention is simple in construction, efficient in operation and capable of being readily fitted under substantially all normal working conditions.

WHAT WE CLAIM IS:—

1. A device for compressing the seals for pipe joints of the bell and spigot type comprising an anchor ring shaped to seat on and adapted to be secured on the flange of the bell section of a pipe and a follower ring adapted to be fitted slidably on the spigot section of a pipe and shaped to fit around and substantially to enclose the seal and means for drawing the follower ring toward the anchor ring for compressing the seal and in which the anchor and follower rings are formed as castings and are provided at the ends with integral outwardly and substantially radially projecting eyes and in which the eyes are adapted to be engaged by bolts which with the co-operation of nuts enable the said rings to be secured on the respective end portions of the pipes to be joined the said bolts in the case of the follower ring being adapted to have mounted thereon a filler piece or pieces which conform to the cross section of the follower ring.

2. A device according to Claim 1 in which the filler pieces are made of varying thicknesses.

3. A device according to Claim 1 in which the anchor ring is constructed and adapted for use substantially as described herein with particular reference to Figures 3, 4 and 5, of the accompanying drawings.

4. A device according to Claim 1 in which the follower ring is constructed and adapted for use substantially as described herein with particular reference to Figures 6 and 7 of the accompanying drawings.

5. A device for compressing the seals for pipe joints of the bell and spigot type constructed, arranged and adapted for use substantially as described herein and shown in the accompanying drawings.

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PROVISIONAL SPECIFICATION.

Improvements relating to Devices for Compressing the Seals for Pipe Joints of the Bell and Spigot Type.

We, PLATT MALLEABLE CASTINGS LIMITED of Clive Foundry, Leamore, Walsall in the County of Stafford, a Company incorporated under the Laws of the United Kingdom of Great Britain, do hereby declare this invention to be described in the following statement:—

This invention has reference to improvements relating to devices for compressing the seals for pipe joints of the bell and spigot type.

Devices for the purpose aforesaid as generally employed heretofore comprise an anchor ring adapted to be mounted on and to be secured firmly on the bell ended section of a pipe, a follower ring which is adapted to be slidably mounted on the spigot section of a pipe adjacent to that part of the spigot which is fitted into the bell end of the pipe to which it is to be joined and bolts and nuts for drawing together the anchor and follower rings when located on and secured on their respective pipe sections to effect compression of the seals.

In order to enable devices as aforesaid to be adapted to pipes of varying diameters it has been proposed to form anchor rings in two or more parts which are provided at the ends with serrated portions which can be engaged so as to vary the effective circumferential dimensions of the ring, and then securing adjacent parts together in an adjusted relationship by means of nuts and bolts.

Likewise it has been proposed to form the follower rings in two or more parts and to

provide each part adjacent to the ends with a plurality of longitudinally arranged upstanding ribs which are engageable by clips so as to vary the circumference of the follower ring, filler pieces of a similar cross section to the follower ring being interposed in the gaps which may obtain between the presented ends of the said parts. The filler pieces aforesaid are retained in position by the clips when fitted over the relevant ribs.

Whilst devices as aforesaid have proved efficient in practice the fitting of the rings is found to be difficult when working in confined spaces such as excavations and the present invention has for its object to provide an improved device for use in the compression of seals for pipe joints of the bell and spigot type which is simple in construction and readily capable of fitment with facility under the majority of working conditions.

Accordingly the invention consists of a device for compressing the seals for pipe joints of the bell and spigot type in which the sections of the anchor and follower rings are provided at the ends with outwardly and substantially radially projecting eyes and in which the eyes are adapted to be engaged by bolts which with the co-operation of nuts enable the said rings to be secured on the respective end portions of the pipes to be joined the said bolts in the case of the follower ring being adapted to have mounted thereon a filler piece or pieces which conform to the cross section of the follower ring said filler pieces conveniently being of varying thicknesses.

The invention also resides in a device for compressing the seals for pipe joints of the bell and spigot type constructed and adapted for use substantially as will be described hereinafter.

According to an embodiment of the invention the anchor ring is formed as four similar segments.

Each segment is provided at the end with an outwardly and radially projecting lug in which is formed a central hole, said holes when in register being adapted to have bolts passed therethrough which co-operate with nuts so that the segments may be secured together around the bell portions of pipes of varying diameters.

The follower ring is formed of two segments or more the ends of which are provided with outwardly and radially projecting lugs having therein holes through which when brought into register are passed bolts which co-operate with nuts for securing the segments together around the spigot end of a pipe.

The bolts aforesaid for the follower rings have located therein filler pieces the configuration of which conforms to the cross section of the follower ring.

The filler pieces are made of varying thicknesses.

In use the anchor ring segments are fitted on to the bell portion of a pipe and bolted together as required so as to engage firmly the outer periphery of the said bell portion.

The follower ring segments are placed around the spigot section of the pipe and the requisite filler pieces inserted to fill any gap between the presented ends of the segments of the follower ring, the bolts are then passed through the holes in the lugs in the filler pieces and the nuts engaged therewith and tightened up to secure the segments to each other.

The nuts on the drawing bolts are then tightened so as to cause the follower ring to be drawn over the spigot section on which it is mounted to effect a compression of the seal.

It will be appreciated that when fitting the anchor and follower rings separation of the individual segments is not required so that when a bolt is removed the segments hang in a chainwise manner which admits of the segments being readily manipulated to embrace the bell portion preparatory to being secured thereon.

Further in the case of fitting a follower ring individual fitting of filler pieces during actual fitting is not required as this can be effected preparatory to fitting as determined by the known diameter of the spigot section of a pipe to which a follower ring is to be fitted.

It will be seen that a device in accordance with the invention is simple in construction, efficient in operation and capable of being readily fitted under substantially all normal working conditions.

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831,294 COMPLETE SPECIFICATION
2 SHEETS

This drawing is a reproduction of the Original on a reduced scale.
SHEETS 1 & 2

FIG.6.

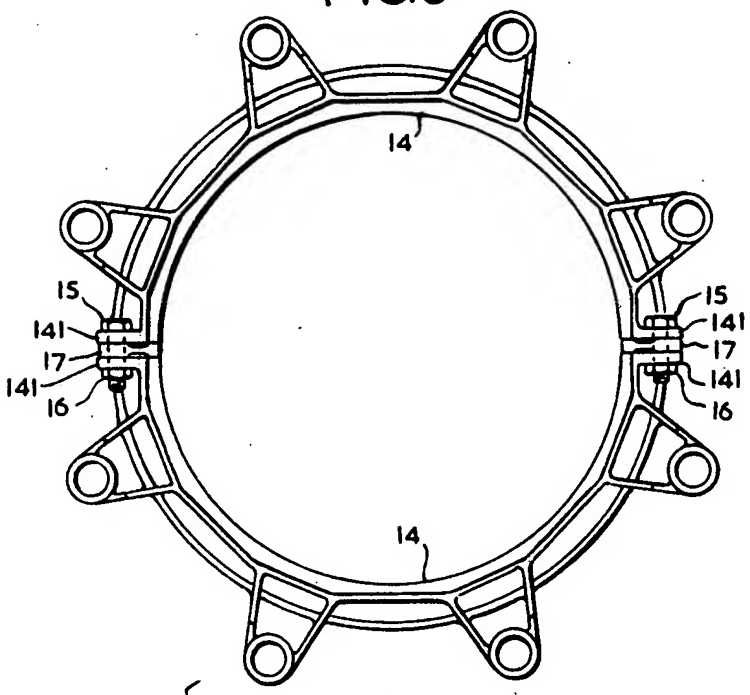

FIG.7.

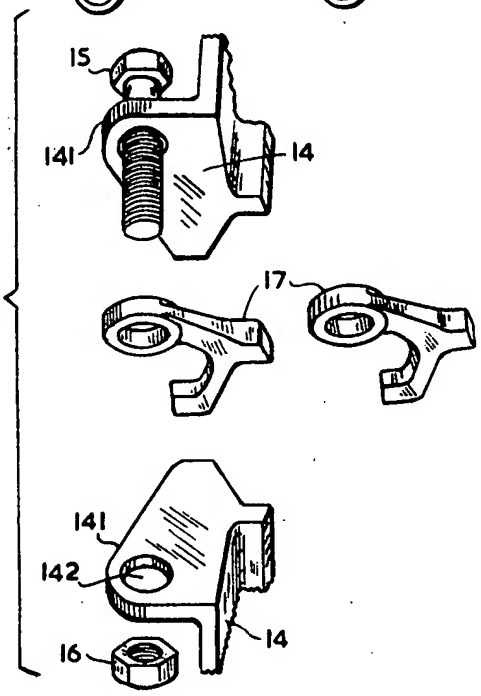

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FIG.1.

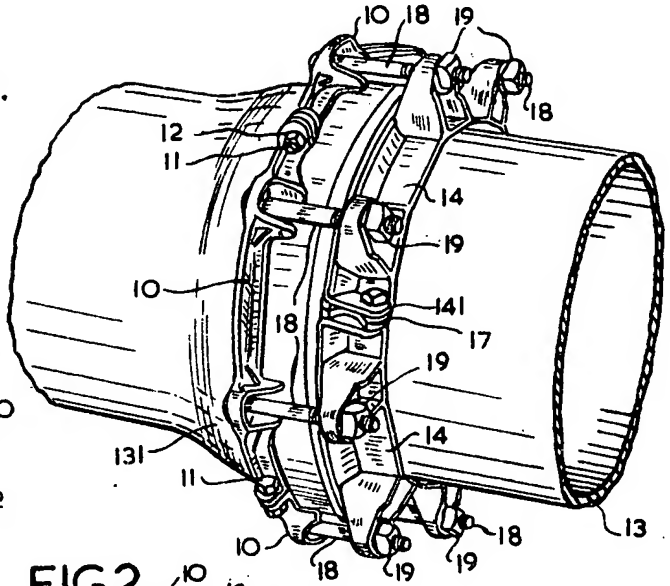

FIG.5.

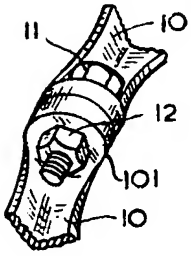

FIG.2.

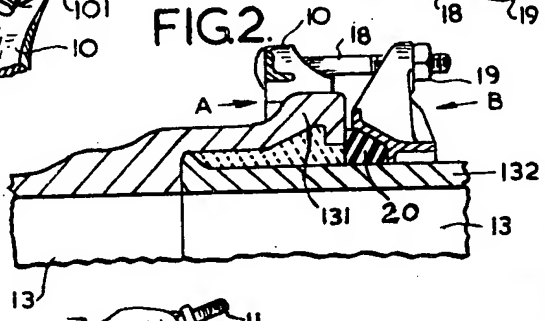

FIG.4.

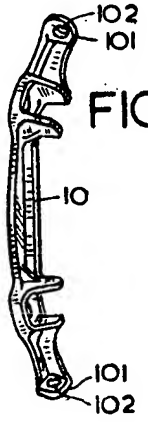

FIG.3.